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## Consumer satisfaction in prosthetics and orthotics facilities

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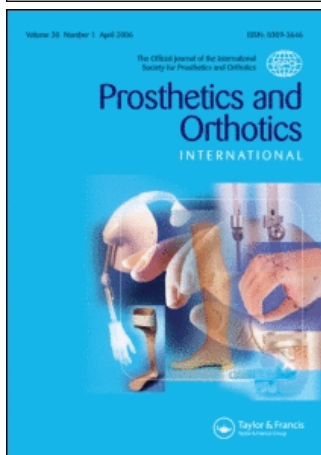
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## Consumer satisfaction in prosthetics and orthotics facilities

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### Abstract

The aim of this study was to assess consumer/patient satisfaction with the services of the prosthetics and orthotics (P&O) facilities in the north of the Netherlands, using a modified SERVQUAL questionnaire. In this questionnaire, consumer interests and experiences are assessed on a 5-point Likert scale. The questionnaire consisted of 30 items covering 5 domains: tangibles, reliability, responsiveness, assurance and empathy and the consumers were invited to give an overall rating of satisfaction (scale 1–10). Consumers of four P&O facilities were asked to participate. In total 496 consumers (aged 0–76) participated; 279 consumers received orthopaedic shoes and 217 consumers received either prostheses or orthoses.

An overall satisfaction rating of 8 or higher was given by 75% of the consumers (mean 8.0;  $sd=1.2$ ). Consumers were defined as satisfied with the services of the P&O facility if they rated their experiences on a certain item equal or better than their rating of its importance. Eighty-five percent (85%) or more of the consumers were satisfied with the P&O facility in 24 of the 30 (80%) items of the SERVQUAL questionnaire. Of the 6 less unsatisfying items, 3 were related to the domain “tangibles”, 2 were related to the domain “empathy” and 1 to the domain “responsiveness”. The management of

the P&O facility can use this information to increase consumer satisfaction by improving quality and service at these items. In general, the degree of consumer overall satisfaction was not related to age, gender, and type of assistive device or “length of relationship of consumer” and P&O facility. Only consumers who received orthopaedic shoes rated their overall satisfaction significantly lower (0.3) than consumers who received other types of devices. This difference is clinically not relevant.

### Introduction

Prostheses, orthoses and orthopaedic shoes are provided to many consumers all over the world. In the Netherlands the total number of major lower limb amputations is about 3,000 per year with a population of about 15.5 million people (Rommers *et al.*, 1997). In the north of the Netherlands the incidence of lower limb amputations in 1994 was 21/100,000 (Rommers *et al.*, 1997). However only 50% of the amputees (in the north of the Netherlands) actually receive a prosthesis (Rommers *et al.*, 1997). In the Netherlands, in 1999, the total costs for prostheses and orthoses together were 120 million Dutch guilders (about 48 million US dollars) (CVZ, 2000). The total costs for orthopaedic shoes and shoe adaptations in the Netherlands in 1999 were 135.5 million Dutch guilders (about 54 million US dollars) (CVZ, 2000). However no world-wide figures concerning costs for prostheses, orthoses or orthopaedic shoes are available.

The consumers (patients, being the users of prostheses or orthoses or orthopaedic shoes and the users of the services of the P&O facilities)

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are central actors in the field of total quality management regarding P&O and shoes. The International Society for Prosthetics and Orthotics (ISPO) has great interest in consumer affairs such as services and quality of P&O facilities, consumer satisfaction, and accessibility of P&O facilities (Klasson and Jones, 2000). ISPO is now developing a policy with recommendations to all personnel (prosthetists, managers, medical doctors, physical therapists etc.) with regard to their professional relationship with consumers, (being the users of prostheses or orthoses or orthopaedic shoes). There exists already an important international document with policy for the physically disabled: "The Standard Rules on the Equalisation of Opportunities for Persons with Disabilities". Those rules were formulated and adopted by the United Nations Plenary Meeting on 20 December 1993 and should provide a starting point for the design of new policies by national governments (United Nations, 1994). These rules describe the conditions for equal participation in health care, such as raising awareness in society for persons with a disability and the equal rights for persons with a disability in medical care. Rehabilitation services should be available for persons with disabilities in order to reach and sustain an optimum level of independence and functioning etc. For physically disabled persons rule 4 of the Standard Rules is of the most importance: "There should be development and supply of support services, including assistive devices for persons with disabilities, to assist them to increase their level of independence in their daily living and to exercise their rights. There should be a provision of assistive devices and equipment, personal assistance and interpreter services, according to the needs of persons with disabilities. States should support the development, production, distribution and servicing of assistive devices and equipment and the dissemination of knowledge about them. In rehabilitation programmes for the provision of assistive devices and equipment, States should consider the special requirements of girls and boys with disabilities concerning the design, durability and age-appropriateness of assistive devices and equipment (United Nations, 1994)."

Another paper, the "Consumer Bill of Rights and Responsibilities", which was written in the USA, has some recommendations that ought to

"promote and assure health care quality and value, and protect consumers and workers in the health care system" (Bedutti, 1998). Therefore, there is political interest in this field of the physically disabled and their health care.

An increasing number of international publications regarding consumers' satisfaction in general health care (Ford *et al.*, 1997; Beatty *et al.*, 1998; Carter and Helling, 2000) and rehabilitation care is available (Kramer, 1997; Materson, 1997; Keith, 1998; Goldstein *et al.*, 2000; Kersten *et al.*, 2000;). In general, these publications propose that there should be an increasing focus of the health care providers and professionals on the individual needs and satisfaction of the patients (consumers) in general health and in rehabilitation care.

Measuring the technical quality of a single product (e.g. prosthesis-knee or prosthesis-foot) is less difficult than the measuring of how a patient feels about his or her visit to the P&O facility, how the patient experiences health care or how the patient experiences the empathy of the care-provider. Consumer satisfaction depends on the technical quality of the product (orthopaedic device) and the quality of services provided. Additionally, consumer satisfaction is also depending on the agreement between consumers' priorities and experiences. Up until now, no papers are written about the services, that consumers who visited a P&O facility or an orthopaedic shoe facility, received in general and about their priorities and satisfaction. Besides consumer satisfaction from the point of view of the consumer, consumer satisfaction from the point of view of the management of P&O facilities is also important because satisfaction about the provisions provided, along with cost effectiveness may be a key factor in competitive advantage and economic survival. Therefore, knowledge about the consumer satisfaction is also economically important and it provides insight in topics to improve the quality of the services provided.

The aim of this study was to assess consumer (patient) satisfaction concerning the services of the P&O facilities in the north of the Netherlands, using a modified SERVQUAL questionnaire (Parasuraman *et al.*, 1985).

## Methodology

### Subjects

Consumers at 4 P&O facilities (2 facilities for

orthopaedic shoes, and 2 facilities for prosthetics and orthotics) of the OIM-group (12 P&O facilities in the north of the Netherlands) were asked to participate. All subjects were able to read and fully understand Dutch well, in order to fill in the questionnaire. Most of these patients (in the north of the Netherlands) are fitted with a prosthesis, orthosis or orthopaedic shoes in one of the modern recently built or just rebuilt orthopaedic facilities (P&O facilities) of the OIM-group. In total 496 consumers (aged 0-76) participated; 279 consumers received orthopaedic shoes and 217 consumers received either prostheses or orthoses.

### Methods

Data were collected using a modified version of the SERVQUAL instrument, which was developed in 1983 by the Marketing Science Institute in Cambridge (Parasuraman *et al.*, 1985; 1988). In this questionnaire, consumers' priorities and experiences are assessed on a 5-point Likert scale. The questionnaire consisted of 30 items covering five domains:

- **Tangibles** (Accessibility): indicating appearance of physical facilities (such as parking space and consultation rooms), equipment, privacy, personnel and communication materials (such as information brochures) of the P&O facility
- **Reliability** (Administrative Technical Management): indicating the ability of the P&O facility to perform the promised service dependably and accurately (delivery and waiting times)
- **Responsiveness** (Clinical Technical Management): indicating the willingness of the P&O personnel to help consumers, and provide prompt service (consumer P&O personnel interaction)
- **Assurance** (Interpersonal Management) with regard to:
  - Competence: indicating that the P&O personnel possessed the required skills and knowledge to perform service
  - Courtesy: indicating politeness, respect, consideration, and friendliness of P&O personnel
  - Credibility: indicating trustworthiness, and honesty of the P&O personnel
  - Security: indicating freedom of danger, risk or doubt for the consumers in their direct relation to P&O personnel

- **Empathy** (Continuity of Care) with regard to:
  - Access: indicating approachability and ease of contact of the P&O desk

Communication: indicating keeping consumers informed in language they can understand and listening to the consumers

Understanding the consumer: indicating the effort the P&O facility makes to know their consumers and their needs (Dyck, 1996).

The SERVQUAL questionnaire was modified on the basis of two focus-group discussions of consumers concerning the specific needs in P&O. Participants of these focus groups were selected P&O consumers representative of the total study population with respect to consumer type (orthopaedic shoes, orthoses or prostheses), age, gender and referral centre.

All the 30 items of the SERVQUAL questionnaire were asked twice. Once with regard to the consumer's rating of importance and once with regard to experience: "the prosthetist/orthotist/orthopaedic shoe-technician has enough time for me". Answer-possibilities are, "This item is important for me: very important – not important" (1-5; rating of importance of the consumer) and: "My experience with the P&O facility is very good – very bad" (1-5; experience of the consumer) (for items see Table 1).

Finally, the consumers were asked to give an overall satisfaction, on a scale of 1 to 10, for their general experience with the P&O facility, indicating that "1" is the poorest score and "10" is the best score of overall satisfaction.

The consumers were invited to fill in the SERVQUAL questionnaire and to send it back to the researchers. The researchers were independent and secured the consumers' privacy. The answers to the items were entered in a database and data were processed anonymously.

### Statistics

If the answer regarding "experience" is rated higher than or equal to "rating of importance", a positive rating was given to that item.

Data analysis performed in SPSS-package included:

- descriptive statistics, t-tests for independent samples and ANOVAs were performed to analyse the differences between gender, age-groups, type of assistive device, and degree of overall satisfaction.

Table 1. Modified SERVQUAL. 30 items, mean experience, mean rating of importance and percentage of consumers who scored the item experience equal or higher than the item rating of importance.

Item	Experience	Rating of importance	Percentage
1 Available parking space	1.7	2.1	86
2 Privacy for consumers	1.7	1.9	86
3 Waiting-room appearance	2.0	1.9	76
4 Fitting-room appearance	2.0	2.1	84
5 Overview of products of the P&O facility	2.3	2.1	78
6 Reliability to specifications	1.4	1.6	91
7 Deliverance times for device	1.4	1.7	89
8 Waiting-times	1.6	2.0	88
9 Explanation about device possibilities	1.3	1.8	96
10 Contribution of consumer in device	1.4	1.7	96
11 Wishes of consumer in relation to cosmesis	1.4	1.7	94
12 Attention and time for consumer	1.3	1.6	95
13 Waiting time for next appointment	1.5	1.8	89
14 Confidant available	1.9	1.9	82
15 Attainableness	1.6	1.6	88
16 Welcome	1.5	1.5	85
17 Competence of personnel	1.2	1.6	98
18 Know-how of personnel	1.3	1.6	96
19 Own prosthetist, orthotist, orthopaedic shoe-technician	1.8	1.8	85
20 Own shop-steward	1.5	1.5	88
21 Time for consumer	1.2	1.5	94
22 Explanation use and maintenance of device	1.5	1.9	93
23 Supply of general information	1.6	2.0	85
24 Information about newest devices	2.0	2.4	90
25 Service and follow-up care	1.2	1.4	94
26 Consultation with Medical Doctor	1.6	1.7	92
27 Respect for consumer	1.4	1.5	90
28 Empathy to consumer	1.9	1.8	82
29 Understanding	2.2	2.1	82
30 Consumer centred	1.6	1.8	95

Domain **Tangibles** is Items 1-5; Domain **Reliability** is Items 6-9; Domain **Responsiveness** is Items 10-16; Domain **Assurance** is Items 17-26; Domain **Empathy** is Items 27-30.

– product moment correlation to analyse the relationship between “length of relationship of consumer and P&O facility”, and degree of overall satisfaction.

## Results

The group (n=496) consisted of 318 women (65.6%), 167 men (34.4%) (missing 11), in age groups: younger than 29 years were 89, between 30 and 54 years were 150 and older than 54 years were 250 consumers (missing 7).

Table 1 shows the ratings in experiences and rating of importance given by the consumers on all 30 items divided in the 5 domains. Additionally the percentage of answers of which the rating of experience is better than or equal to the rating of importance is given also in Table 1.

The overall mean rating was 8 (sd=1.2); for more details see Figure 1. Most consumers received orthopaedic shoes (39%) and orthoses (16%) (Fig. 2).

T-tests did not reveal significant differences in

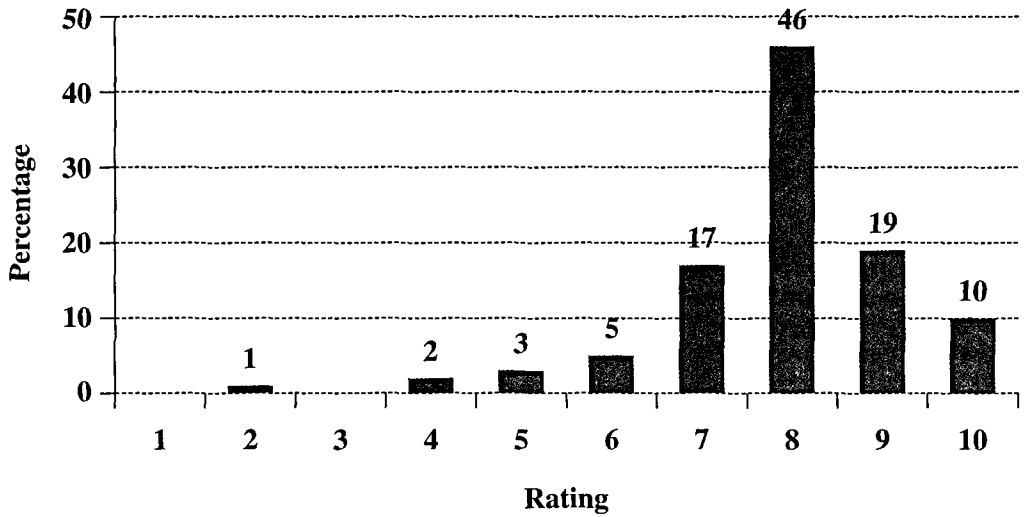


Fig. 1. Overall rating.

the overall satisfaction between men (8.0;  $sd=1.1$ ) and women (8.0;  $sd=1.3$ ). ANOVAs did not reveal significant differences between the overall satisfaction by the consumers and the different age groups (age <29 years: 7.9;  $sd=1.2$ // age >30 and <54: 7.9;  $sd=1.3$ // age >54: 8.1;  $sd=1.1$ ). T-tests did reveal a significant difference ( $p=0.018$ ) between the overall satisfaction and the consumers fitted with orthopaedic shoes (7.9;  $sd=1.3$ ) versus consumers fitted with other devices (8.2;

$sd=1.1$ ). The mean difference in overall satisfaction was however only 0.3. T-tests did not reveal a significant difference between consumers fitted with a heavy device (orthopaedic shoes or prostheses) (8.1;  $sd=1.1$ ) and consumers fitted with light devices (orthoses or shoe-adaptations) (7.9;  $sd=1.3$ ). Prostheses and orthopaedic shoes were regarded as "heavy" devices. Corsets, orthoses, stockings, prefabricated shoes, and shoe-inlays were considered as "light" devices. No significant

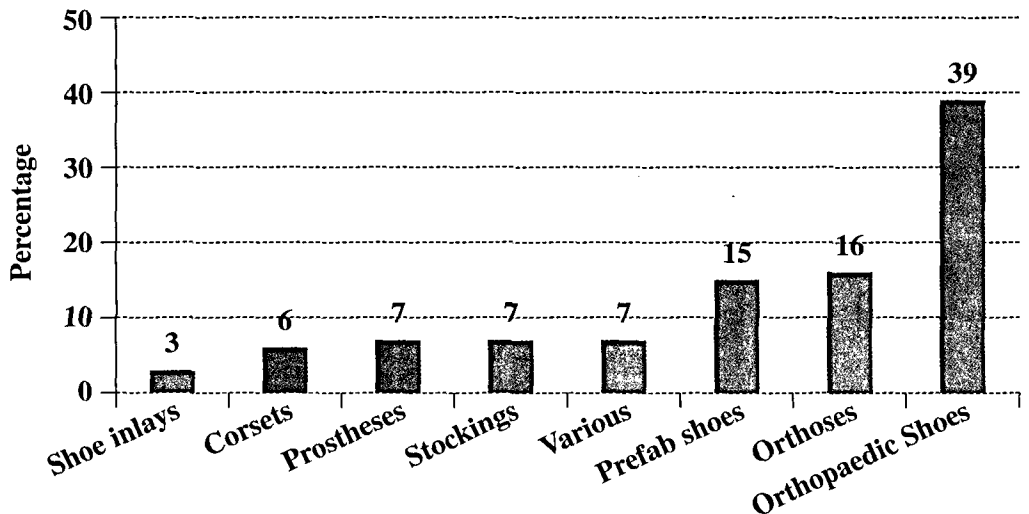


Fig. 2. Type of device provided.

relation was found in the overall satisfaction and "length of relationship of consumers with the P&O facility" ( $r=0.67$ ;  $p=0.17$ ).

### Discussion

In this study the consumers gave an overall mean rating of satisfaction of 8. Most consumers (46%) gave a rating of 8. In total 75% of the consumers gave a rating of 8 or higher. This may be considered as very good. The consumers may have given a high rating (mean 8) because they are dependent on their P&O facility. But because the questionnaires were processed anonymously this seems unlikely.

In health care it is known that the majority (over 80%) of quality problems are traceable to faults lying in the system, processes, structure and practices of organisation. Only a minority of problems is traceable to a person who was not conscientious enough (Deming, 1986; Juran, 1989; Ford *et al.*, 1997). This person perhaps gave the wrong device or was not well trained enough to fit the patient. When applying the 85/15 rule (85% of patients in health care are supposed to be satisfied with the provided services), it can be concluded that less than 85% was scored on only 6 of the 30 items (Table 1) (Deming, 1986; Juran, 1989; Ford *et al.*, 1997). Of the six less satisfying items, three were related to the domain "tangibles", two were related to the domain "empathy" and one was related to the domain "responsiveness".

There was no relationship between consumers' length of relationship with the P&O facility. One could expect that when there was a longer relationship between consumer and facility that the mean rating might be higher because of the mutual dependency between consumer and personnel of the P&O facility.

There were relatively high scores on the domain "Tangibles"; this is probably due to the modern facilities. In one facility there was a low score for waiting room.

There was a significant difference ( $p=0.018$ ) between the overall satisfaction and the consumers fitted with orthopaedic shoes versus consumers fitted with other devices. The mean difference in overall satisfaction was, however, only 0.3. The clinical significance of this difference is debatable.

No relationship, between the mean satisfaction rating and the type of assistive device that the consumer uses, was found. One

could expect that the "heavier" the device, the more the consumer is dependent on the P&O facility and that the rating given by the consumers could be expected to be higher.

The P&O facilities of the OIM-group have approximately 12% of the prosthetics/orthotics market and 7% of the orthopaedic shoe market in the Netherlands. In the northern part of the Netherlands the OIM group is the largest actor in the P&O market. The results of this study are thus important for most of the consumers in the P&O market, in the north of the Netherlands.

Although there is no "golden standard" for the measurement of consumer satisfaction, the authors chose the SERVQUAL. SERVQUAL was used because this questionnaire had shown its usability in health care in the past in the National Health Service in the United Kingdom (Chaston, 1994<sup>a</sup>, 1994<sup>b</sup>). It was also used in rehabilitation (Pot *et al.*, 1999); hospital services (Babakus and Mangold, 1992); nursing services (Scardina, 1994; Hart, 2000; Mitchell *et al.*, 1999), and other health care services (blood bank) (Raspollini *et al.*, 1997). The SERVQUAL, used in rehabilitation of spinal cord injuries, has the ability to highlight patient needs and it provides a tool to signal aspects in the organisation that could be improved (Pot *et al.*, 1999).

This is the first study ever focussing on consumer satisfaction in P&O. In the introduction it is stated that consumerism of patients nowadays is an important item for P&O facilities to look into their consumer's wishes and interests. The use of satisfaction surveys could thus assist strategic and financial planners to identify areas of health care improvement based on the strength of consumer's preferences. Kerfoot wrote in 1991: "the driving force in an organisation is excellence in the quality of services as perceived by customers" (Kerfoot and LeClair, 1991).

As a result of this study, the P&O facilities installed showcases with information brochures about their products. In one of the facilities the waiting room was furnished with new chairs and reading tables. Finally, complaint books and a complaint committee were installed. Although the results of the study show that the consumers' satisfaction was high, health professionals should separate their own values and interests from consumer viewpoints about what is most important for them. The health care



professionals should keep focussing on the consumers' satisfaction by improving quality and services in the five domains by evaluating consumers' experiences and interests through yearly anonymous questionnaires. There seems to be one (future) problem: the consumerism and the increasing available amount of prostheses, orthoses, and orthopaedic shoes versus the narrowing of available choices because of financial reasons (retrenchment). Health care professionals must take the opportunity and the responsibility to take part in this (political) discussion.

## Conclusion

Overall consumer satisfaction regarding the services of P&O facilities was high in this study.

The degree of consumer satisfaction was not related to age, gender, or type of assistive device (except for orthopaedic shoes) or length of relationship of consumer and P&O facility. Professionals in P&O should keep focussing on consumer satisfaction by keeping in touch with the wishes, experiences and interests of consumers by means of questionnaires such as the SERVQUAL.

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